REMARKS

Favorable reconsideration of this application in view of the following remarks is respectfully requested. Currently, claims 1-42 are pending of which claims 1, 8, 19, and 30 are independent.

Claims 1, 2, 7-9, 14-16, 18-20, 25-27, 29-31, 36-38, and 42 were rejected under 35 U.S.C 102(e) as being anticipated by Friedman, U.S. Patent No. 4,935,907. This rejection is respectfully traversed.

In general, a device and/or method relating to the enhancement of position estimating systems can pinpoint the physical position of a target communication device by using direct ranging techniques between search communication devices and the target communication device. This can be accomplished by using two way transmissions that can provide accurate measurements without accurate clocks. In particular, there is no longer a need for synchronization of clocks as with a one way signal.

In one particular aspect, as recited in independent claim 1, a method of pinpointing the physical position of a target communication device can include (a) determining a position of the target communication device with sufficient accuracy to direct a search communication device to within a vicinity of the target communication device, (b) repeatedly measuring the range between the target communication device and the mobile search communication device once the search communication device is within the vicinity by repeatedly exchanging an outbound ranging signal and a reply ranging signal between the target communication device and the search communication device and determining a round-trip signal propagation time of the outbound

ranging signal and the reply ranging signal, and (c) directing movement of the search communication device toward the target communication device in response to the repeatedly measured range. Synchronization of a system clock is not necessary. Thereby, the position of the target communication device can be pinpointed by reducing the range between the search and target communication devices.

Friedman '907 relates to a homing system for directing a human or mobile robot to an object or a location using remote modules associated with objects/locations and a mobile module. A coded omnidirectional signal is transmitted to which a remote module responds with a sonic response signal. Only one remote module can respond to the signal as it is coded. This system, however, is not the method described by independent claim 1. Firstly, Friedman '907 does not determine a position of the target communication device to direct a search communication device to within a vicinity of the target communication device, as recited in claim 1. In fact, the specification of the instant application specifically describes that a position estimating system first guides searchers to the approximate location of the target device. Then, repeated measurements of the range between the target communication device and the mobile search communication device (as described in (b) of claim 1) occur, which Friedman '907 also lacks. Therefore, Friedman '907 clearly fails to describe or suggest the subject matter of independent claim 1. Likewise, claims 2 and 7, which depend from claim 1 are also not described or suggested by Friedman '907.

In another aspect, as recited in independent claim 8, a search communication device for pinpointing the physical position of a target communication device in a vicinity of the search

communication device can include a transmitter configured to transmit an outbound ranging signal to the target communication device, a receiver configured to receive a reply ranging signal from the reference communication device in response to the outbound ranging signal, and a processor configured to determine the range to the target communication device from a round-trip signal propagation time of the reply ranging signal and the outbound ranging signal. The search communication device is configurable to operate in a search mode in which the search communication device can repeatedly determine the range to the target communication device to enable an operator to direct movement of the search communication device toward the target communication device. The position of the target communication device can be pinpointed by reducing the range between the search and target communication devices. Synchronization of a system clock is not necessary.

As pointed out above, Friedman '907 relates to a homing system for directing a human or mobile robot to an object or a location using remote modules associated with objects/locations and a mobile module. A coded omnidirectional signal is transmitted to which a remote module responds with a sonic response signal. Only one remote module can respond to the signal as it is coded. This system, however, is not the device described by independent claim 8. Friedman '907 does not provide a search communication device for pinpointing the physical position of a target communication device in a vicinity of the search communication device. The search communication device, in the instant application, is first guided to the approximate location of the target device. Therefore, Friedman clearly fails to describe or suggest the subject matter of

independent claim 8. Likewise, claims 9, 14 - 16, and 18, which depend from claim 8 are also not described or suggested by Friedman '907.

In another aspect, as recited in independent claim 19, a search communication device for pinpointing the physical position of a target communication device in a vicinity of the search communication device can include means for transmitting an outbound ranging signal to the target communication device, means for receiving a reply ranging signal from the reference communication device in response to the outbound ranging signal, and means for determining the range to the target communication device from a round-trip signal propagation time of the reply ranging signal and the outbound ranging signal. The search communication device is configurable to operate in a search mode in which the search communication device can repeatedly determine the range to the target communication device to enable an operator to direct movement of the search communication device toward the target communication device. The position of the target communication device can be pinpointed by reducing the range between the search and target communication devices. Synchronization of a system clock is not necessary.

Again, Friedman '907 does not describe or suggest the device described by independent claim 19. Friedman '907 does not provide a search communication device for pinpointing the physical position of a target communication device in a vicinity of the search communication device. As previously explained, the search communication device, in the instant application, is first guided to the approximate location of the target device. Therefore, Friedman clearly fails to describe or suggest the subject matter of independent claim 19. Likewise, claims 20, 25 - 27, and 29, which depend from claim 19 are also not described or suggested by Friedman '907.

In yet another aspect, as recited in independent claim 30, a system for pinpointing the physical position of a target communication device can include a search communication device configured to transmit an outbound ranging signal and receive a reply ranging signal, a target mobile communication device configured to receive the outbound ranging signal and transmit the reply ranging signal to the search communication device. The search communication device can determine the range to the target communication device from a round-trip signal propagation time of the reply ranging signal and the outbound ranging signal. The search and target communication devices are configurable to operate in a search mode in which the search communication device can repeatedly determine the range to the target communication device to enable an operator to direct movement of the search communication device toward the target communication device. Synchronization of a system clock is not necessary. The position of the target communication device can be pinpointed by reducing the range between the search and target communication devices.

Friedman '907 relates to a homing system for directing a human or mobile robot to an object or a location using remote modules associated with objects/locations and a mobile module. A coded omnidirectional signal is transmitted to which a remote module responds with a sonic response signal. Only one remote module can respond to the signal as it is coded. This system, however, is not the system described by independent claim 30. Friedman '907 does not provide that the search and target communication devices operate in a search mode. Thus, Friedman '907 fails to describe or suggest the subject matter of independent claim 30. Likewise,

claims 31, 36 - 38, and 42, which depend from claim 30, are also not described or suggested by Friedman '907.

None of the claims 1, 2, 7-9, 14-16, 18-20, 25-27, 29-31, 36-38, and 42 are described or suggested by Friedman '907. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 1-6, 8-13, 15-24, 26-35, 37, 38, 41, 42 were rejected under 35 U.S.C. 102(b) as being anticipated by Sanderford, U.S. Patent No. 4,799,062. Claim 39 was rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderford '062 as applied to claim 30, and further in view of Kotoh '936. Claim 40 was rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderford '062 as applied to claim 30, and further in view of Linnett, WIPO Publication WO 01/78032. These rejections are respectfully traversed.

Sanderford '062 relates to a method and apparatus for radio position determination including a synchronized pulse for time reference. In Sanderford '062, the entire system is synchronized.

In the instant invention, the physical position of a target communication device can be pinpointed by using direct ranging techniques between search communication devices and the target communication device. This can be accomplished by using two way transmissions that can provide accurate measurements without accurate clocks. In particular, there is no longer a need for synchronization of clocks, as with a one way signal.

As the entire system of Sanderford '062 is synchronized by the central monitoring station, Sanderford '062 fails to describe or suggest the invention of independent claim 1. Claim

1, as amended, recites that "synchronization of a system clock is not necessary." Likewise, none of claims 2-6, which depend from claim 1, are described or suggested by Sanderford '062.

Similarly, independent claims 8, 19, and 30, as amended, each recite that "synchronization of a system clock is not necessary," which Sanderford '062 does not describe or suggest. Thus, claims 9 - 13 and 15 - 18, claims 20-24 and 26-29, and claims 31-35, 37, 38, 41, and 43, which depend from claims 8, 19, and 30, are also not described or suggested by Sanderford '062.

Claim 39 depends from independent claim 30. For at least the reasons noted above, Sanderford '062 also fails to describe or suggest the subject matter of claim 39.

Kotoh relates to a transmitting apparatus that emits a microwave rescue signal in the event of a marine accident of the wearer. Kotoh, however, fails to overcome at least the noted deficiency in Sanderford '062. Kotoh does not provide for synchronization of a system clock. Linnett also does not provide for synchronization of a system clock. Therefore, claim 39 is neither described nor suggested by Sanderford, alone or in combination with Kotoh.

Claim 40 depends from independent claim 30. Likewise, for at least the reasons noted above, Sanderford '062 also fails to describe or suggest the subject matter of claim 40.

Linnett relates to an emergency signaling device and system, which transmits emergency signals to an emergency authority when a time set for transmission passes without being cancelled or reset. Linnett, however, fails to overcome at least the noted deficiency in Sanderford '062. Therefore, claim 40 is neither described nor suggested by Sanderford '062, alone or in combination with Linnett.

Accordingly, withdrawal of these rejections is respectfully requested.

Claims 1, 7, 8, 14, 17, 19, 25, 28, 30, 36, and 41 were rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner, U.S. Patent No. 5,157,408. This rejection is respectfully traversed.

Wagner '408 relates to a radio system for determining the range and bearing of mobile equipment with low probability of interception. Wagner '408, however, does not determine a position of the target communication device within a vicinity of the target communication device, as recited in claim 1. As described in the instant specification, a position estimating system first guides searchers to the approximate location of the target device. Then, repeated measurements of the range between the target communication device and the mobile search communication device (as described in (b) of claim 1) occur, which the Examiner acknowledges that Wagner '408 lacks. Therefore, Wagner '408 clearly fails to describe or suggest the subject matter of independent claim 1. Likewise, claim 7, which depends from claim 1, is also not described or suggested by Wagner '408.

As pointed out above, Wagner '408 relates to a radio system for determining the range and bearing of mobile equipment with low probability of interception. Wagner '408 does not provide a search communication device for pinpointing the physical position of a target communication device in a vicinity of the search communication device. The search communication device, in the instant application, is first guided to the approximate location of the target device. Therefore, Wagner '408 clearly fails to describe or suggest the subject matter

of independent claim 8. Likewise, claims 14 and 17, which depend from claim 8 are also not described or suggested by Wagner '408.

Again, Wagner '408 does not describe or suggest the device described by independent claim 19 as Wagner '408 does not provide a search communication device for pinpointing the physical position of a target communication device in a vicinity of the search communication device. As previously explained, the search communication device, in the instant application, is first guided to the approximate location of the target device. Therefore, Wagner '408 fails to describe or suggest the subject matter of independent claim 19. Likewise, claims 25 and 28, which depend from claim 19, are also not described or suggested by Wagner '408.

Wagner '408 relates to a radio system for determining the range and bearing of mobile equipment with low probability of interception. This system, however, is not the system of independent claim 30. Wagner '408 does not provide that the search and target communication devices operate in a search mode. Thus, Wagner '408 fails to describe or suggest the subject matter of independent claim 30. Likewise, claims 36 and 41, which depend from claim 30 are also not described or suggested by Wagner '408.

None of claims 1, 7, 8, 14, 17, 19, 25, 28, 30, 36, and 41 are described or suggested by Wagner '408. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 1, 3, 4, 8, 10, 11, 17, 19, 21, 22, 28, 30, 32, 33, and 41 were rejected under 35 U.S.C. 103(a) as being unpatentable over Takase, U.S. Patent No. 6,396,434 in view of Forey. Claim 39 was rejected under 35 U.S.C. 103(a) as being unpatentable over Takase, U.S. Patent No. 6,396,434 and Forey as applied to claim 30, and further in view of Kotoh. Claim 40 was

rejected under 35 U.S.C. 103(a) as being unpatentable over Takase '434 and Forey as applied to claim 30, and further in view of Linnett. These rejections are respectfully traversed.

Takase '434 relates to a radar system for use in rescue activities. This system of Takase '434 is a reflective (i.e., inactive) system and not the claimed active-type system. Forey relates to an overview of the application of UHF and microwave technology to search and rescue, and discusses an international standard, which has been adopted relating to search and rescue transponders. This is not the claimed system.

As to claim 1, and claims 3 and 4, which depend therefrom, Takase '434 and Forey each at least fail to describe determining "a position of the target communication device within a vicinity of the target communication device," as recited in claim 1. Further, the systems described in either reference involve synchronization of a system clock. The invention as claimed in claim 1 does not require such synchronization.

Similarly, as to claims 8, and 19, and claims 10, 11, and 17, and claims 21, 22, and 28, which depend from claims 8 and 19, respectively, Takase '434 and Forey also fail to describe determining "a position of the target communication device within a vicinity of the search communication device," as recited in claims 8 and 19, and involve synchronization of a system clock. The invention as claimed in claims 8 or 19 does not require such synchronization.

Finally, as to claim 30, and claims 32, 33, and 41, which depend therefrom, Takase '434 and Forey each fail to describe determining "a position of the target communication device within a vicinity of the target communication device," as recited in claim 30. Further, the

systems described in either reference involve synchronization of a system clock. The invention as claimed in claim 30 does not require such synchronization.

Claim 39 depends from independent claim 30. For at least the reasons noted above, Takase '434 and Forey also fail to describe or suggest the subject matter of claim 39.

As described above, Kotoh relates to a transmitting apparatus that emits a microwave rescue signal in the event of a marine accident of the wearer. Kotoh, however, fails to overcome at least the noted deficiency in Takase '434 and/or Florey. Therefore, claim 39 is neither described nor suggested by Takase '434 and/or Florey, alone or in combination with Kotoh.

Claim 40 depends from independent claim 30. Likewise, for at least the reasons noted above, Takase '434 and Forey also fail to describe or suggest the subject matter of claim 40.

As described above, Linnett relates to an emergency signaling device and system, which transmits emergency signals to an emergency authority when a time set for transmission passes without being cancelled or reset. Linnett, however, fails to overcome at least the noted deficiency in Takase '434 and/or Florey. Therefore, claim 40 is neither described nor suggested by Takase '434 and/or Florey, alone or in combination with Linnett.

None of claims 1, 3, 4, 8, 10, 11, 17, 19, 21, 22, 28, 30, 32, 33, and 39-41 are described or suggested by the cited references. Accordingly, withdrawal of these rejections is respectfully requested.

Applicants submit that all pending claims are in condition for allowance, and formal notice of such is solicited. If the Examiner has any questions or comments, the Examiner is respectfully requested to contact the undersigned at the number listed below.

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